

## **Effects of calcination temperature and zinc-source concentration on chemical-solution synthesized ZnO nanorods**

In this paper, ZnO nanoparticles, in particular nanorods, were prepared by a time-saving and a cost effective chemical-solution process. Zinc acetate dehydrates, 2-propanol and diethanolamine were used as the source to produce a well controlled precursor. The effects of calcination temperature (200 to 1000°C) and mole ratio of zinc acetate dehydrate to 2-propanol on ZnO particle size and shape were systematically investigated. X-ray diffraction and Fourier-Transform Infrared result indicated that a single phase ZnO has been obtained at calcinations temperature higher than 200°C. It has been revealed from micrographs of transmission and scanning electron microscopes that nanorods, with diameter and length ranging from 20 to 150 nm and 100 to 250 nm, respectively, were observed at samples calcinated at 400 and 600°C. As the temperature increased beyond 800°C, the size of nanoparticles became larger with irregular shape. In contrast, by varying mole ratio of precursor, no significant effect on the shape and size of the nanoparticles were observed.